

RFI – Antarctic Vessels

General Information

Document Type: Sources Sought / Request for Information
Solicitation Number: RFI-AntarcticVessels
Original Response Date: January 31, 2016
Current Response Date: January 31, 2016
Classification Code: W019 – Lease or Rental of Equipment / Ships...
NAICS Code: 483112 – Deep Sea Passenger Transportation

Contracting Office Address

National Science Foundation, Division of Acquisition and Cooperative Support (DACS),
4201 Wilson Boulevard, Room 475, Arlington, VA, 22230

Description

The National Science Foundation (NSF) is an independent federal agency created by Congress in 1950 to promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense. The Antarctic Infrastructure and Logistics Section of the Division of Polar Programs (PLR) supports scientific research in the Antarctic and operational support related to that research. Science programs include disciplinary, multidisciplinary, and broad, interdisciplinary investigations directed toward the Antarctic both as a region of special scientific interest and a region important to global systems. Disciplinary interests encompass the atmospheric, biological, physical, earth, ocean, and social sciences.

The NSF is performing market research to determine potential sources for one icebreaking research vessel (R/V) and/or one ice-capable R/V and/or a logistics system approach to perform extended work in the southern hemisphere. Respondents may provide information on one vessel, both vessels, and/or a logistics system that accomplishes the general scale of at-sea science, station support, and personnel movement requirement as outlined below.

I. The icebreaking R/V would have the following general capabilities:

- A. Capability of independently breaking sea ice with a thickness ≥ 3 feet (threshold) / ≥ 4.5 feet (objective) at a continuous speed ≥ 3 knots, with a minimum transit speed of 11 knots in ice-free waters;
- B. Maximum draft of 30 feet;

- C. Endurance of ≥ 70 days (threshold) / ≥ 90 days (objective) underway and 17,000nm without replenishment;
- D. Support of ≥ 45 science and technical personnel (threshold) / ≥ 55 science and technical personnel (objective);
- E. Scientific laboratory space of $\geq 5,700$ ft² (threshold) / 6,500 ft² (objective);
- F. Working deck(s) area of $\geq 4,500$ ft² (threshold) / 5,500 ft² (objective);
- G. Capacity to carry ≥ 15 standard 20-foot intermodal containers in the hold and on decks;
- H. All vessel underway discharge must be consolidated to one side of the vessel providing a “clean working side”;
- I. Flow-through scientific seawater system capable of delivering ≥ 40 liters/minute (threshold) / 100 liters/minute (objective) to all laboratory spaces;
- J. Ability to tow a multi-channel seismic streamer and provide compressed air supply;
- K. Ability to have stern facing deep sea research winch able to handle 9/16” mechanical and /or .680” electromechanical cable with stern deployment system (A-Frame);
- L. Ability to have “clean working side” facing deep sea winching and deployment system capable of .322” electromechanical cable;
- M. On board cranes capable of moving loaded 20-foot intermodal containers on off vessel;
- N. Helicopter deck and hangar capable of supporting two light helicopters or one medium helicopter;
- O. Deep ocean multibeam bathymetric mapping system (threshold); Deep ocean and mid-level multibeam systems (objective);
- P. Walk in refrigerators and freezers for scientific work and sample storage (-20° to 10°C) for science samples;
- Q. Dynamic Positioning System \geq ABS DPS-0 (threshold) / ABS DPS-1 (objective);
- R. Low underwater radiated noise at vessel speeds ≤ 8 knots (not required, objective only). Targeting ICES 209 standards at ≤ 8 knots versus 12 knots;
- S. Capacity to transport, deliver and pump $\geq 60,000$ gallons of various grades of diesel such as Antarctic Grade diesel, to Antarctic research stations;
- T. LAN, voice and CCTV connections throughout laboratories and living spaces, preferably via fiber-optics running throughout vessel;
- U. Ability to fully operate in water temperatures 28°F to 90°F and Air temperatures of -40°F to 100°F and wind speeds of 100 knots;
- V. Vessel must comply with US Coast Guard requirements of Subchapter U;
- W. Vessel must be US flagged;
- X. Ability to conform to IMO Polar Code regulations, as required; and
- Y. All areas on the vessel, including lab and living areas, must meet American Bureau of Shipping HAB+ habitability standards.

II. The ice-capable vessel for research would have the following capabilities:

- A. Capability of independently breaking sea ice with a thickness ≥ 1 foot (threshold) / ≥ 1.5 feet (objective) at a continuous speed ≥ 3 knots, with a minimum transit speed of 10 knots in ice-free waters;
- B. Maximum draft 30ft;
- C. Endurance of ≥ 70 days (threshold) / ≥ 85 days (objective) underway and 15,000nm without replenishment;

- D. Support of ≥ 28 science and technical personnel (threshold) / 40 science and technical personnel (objective);
- E. Scientific laboratory space of $> 2,900 \text{ ft}^2$ (threshold) / $3,500 \text{ ft}^2$ (objective);
- F. Working deck(s) area of $> 3,600 \text{ ft}^2$ (threshold) / $4,000 \text{ ft}^2$ (objective);
- G. Capacity to carry a total of > 9 standard intermodal 20-foot containers in the hold and on deck;
- H. All vessel underway discharge must be on consolidated to one side of the vessel providing a “clean working side”;
- I. Flow-through scientific seawater system capable of delivering > 40 liters/minute (threshold) / 100 liters/min (objective) to all laboratory spaces;
- J. Ability to have stern facing deep sea research winch able to handle 9/16” mechanical and /or .680” electromechanical cable with stern deployment system (A-Frame);
- K. Ability to have “clean working side” facing deep sea winching and deployment system capable of .322” electromechanical cable;
- L. On board cranes capable of moving loaded 20-foot intermodal containers on and off vessel;
- M. Walk-in refrigerators and freezers, space for scientific work and sample storage (-20° to 10°C) for science samples (objective);
- N. Capacity to transport, deliver and pump $> 60,000$ gallons of various grades of diesel, such as Antarctic Grade diesel, to Antarctic research stations;
- O. LAN, voice and CCTV connections throughout laboratories and living spaces, preferably via fiber-optics running throughout vessel;
- P. Ability to fully operate in water temperatures 28°F to 90°F and air temperatures of -40°F to 100°F and wind speeds of 100 knots;
- Q. All vessel underway discharge must be consolidated to one side of the vessel providing a “clean working side”;
- R. Vessel must comply with US Coast Guard requirements of subchapter U;
- S. Vessel must be US Flagged;
- T. Ability to conform to IMO Polar Code regulations, as required; and
- U. All areas on the vessel, including lab and living areas, must meet American Bureau of Shipping HAB+ habitability standards.

Responses may provide information on new purpose-built vessels, existing vessels, or vessels requiring service life extensions to meet estimated needs through the year 2030; 2050 for new vessels.

III. Respondents may also suggest an alternate logistics system approach to accomplish science and resupply requirements at Palmer Station.

Palmer Station, located on Anvers Island in the Antarctic Peninsula, is a year-round research facility supported by the US Antarctic Program. The station has docking facilities capable of accepting a range of vessels, with a maximum draft of 30ft. The station is also reachable via medium or light-lift helicopter landing. The nearest marine ports and airports include Punta Arenas, Chile, and Ushuaia, Argentina

Historical operational budgets, science activities, and station resupply information are listed in Tables 1 and 2 below. NSF/PLR is not anticipating any significant increase in vessel funding beyond nominal annual inflation. Respondents should consider these

values as reasonable guidance for future out-year funding levels and tailor the scale of their submissions accordingly.

Vessel	Avg Annual Cost	Avg # Sea Days	Year	Ross Sea Science Days	Antarctic Peninsula Science Sea Days	Other Science Sea Days	Avg Size Science Party Aboard Vessel
Ice Breaking R/V	\$18M	273	2016	0	187	26	26
			2015	99	60	102	22
			2014	115	119	77	26
			2013	0	238	51	29

Table 1. Average historical Icebreaking R/V budget and operational tempo. Total cost in \$ millions, includes charter, subsistence and annual fuel expenditures.

Vessel	Avg Annual Cost	Avg # Sea Days	Year	Antarctic Peninsula Science Sea Days	Other Science Sea Days	Palmer Station Resupply Trips	Palmer Station Science Transport Trips	# Scientists Transported to/from Palmer Station	TEU's transported to Palmer Station	Avg Size Science Party Aboard Vessel
Ice Capable R/V	\$12M	244	2016	240	0	2	7	58	45	21
			2015	243	0	2	7	52	38	21
			2014	269	13	2	7	46	41	21
			2013	240	0	2	8	71	38	21

Table 2. Average historical ice-capable R/V budget and operational tempo. Total cost in \$ millions, includes charter, subsistence and annual fuel expenditures.

General

Responses to this Sources Sought notice will be treated as information only and considered as part of the Government's market research.

Any interested firm should submit written responses that address their ability to provide the requirements described herein and include associated specifications. If modifications to existing vessels are required, a rough order timeline for completing upgrades is requested. NSF may follow-up with respondents for additional information or questions as necessary.

Please do not submit any proprietary information in your response.

Responses for each option shall not exceed five pages and must be submitted via e-mail to the contacts listed in the Federal Business Opportunities (FBO) notice no later than January 31, 2016. E-mail submissions are requested. Please reference "*RFI-Antarctic Vessels*" in the email subject line.

THERE IS NO SOLICITATION AT THIS TIME. This request for information does not constitute a request for proposals and submission responses are purely voluntary. The Government assumes no financial responsibility for costs incurred in responding to this notice.